Remarks/Arguments

Applicants have received and carefully reviewed the Office Action mailed August 9, 2004. Claims 23-75 are pending. Reconsideration and reexamination are respectfully requested.

Allowable Subject Matter

Applicants thank the Examiner for indicating claims 64-67 are allowed.

Rejections under 35 U.S.C. § 103(a)

Claims 23-63 and 68-75 are rejected as being unpatentable over Hudson et al. (US 5,970,997 and Erdman et al. (US 6,414,408). The Examiner asserts that, with respect to independent claims 23, 29, 35, 42, 51, 58, 61, 68, 70, 72, and 75, and dependent claims 26, 27, 31, 32, 38, 39, 54, 55, 69, and 71, Hudson et al. teaches the load and spring being detected by monitoring the rotation of the positioning and bias members to detect a stall before the positioning and biasing members exceed a predetermined position. The Examiner cites the Abstract for this teaching. Independent claim 23 recites the steps of:

> providing power to the drive motor to move the movable member against the biasing force along the range of motion from the first position toward the second position;
>
> determining when the drive motor stalls along the range of motion at a stalled position by monitoring one or more electrical characteristic of the drive motor; and
>
> reducing the power supplied to the drive motor to a level that is adapted to maintain the movable member at or substantially at the stalled position against the bias force if the determining step determines that the drive motor has stalled.

Independent claims 29 and 68 recite a similar first step of providing power to the drive motor to move the movable member against the biasing force.

After careful review, Applicants submit that Hudson et al. do not teach or suggest the first step of providing power to the drive motor to move the movable member <u>against the biasing force</u>. In Hudson et al., the motor turns drive shaft 14, which turns transmission 16, causing the

input shaft 24 to turn, thus moving the valve 32 into a first position. Once the valve 32 is in a first position and stops, the motor causes the transmission 16 to turn bias shaft 20, which winds spring 18, thus storing kinetic energy. The brake 35, which is connected to the spring 18, is controlled by a logic/control member 36 through a network 38. See column 4, line 37 through column 5, line 21.

During operation, the Hudson et al. device initially moves the valve to the first or home position, where the valve stops moving. Power is continued to be supplied to the motor to wind the spring without moving the valve, as it cannot move past the home position. Thus, during the initial spring wind up, Hudson et al. does not provide power to the drive motor to move the movable member against the biasing force along the range of motion from a first position toward a second position, as is recited in claim 23.

Once the spring is wound and the brake is applied, the motor of Hudson et al. does not move the movable member (valve 32) against the biasing force along the range of motion from a first position toward a second position, as is recited in claim 23. Rather, in the Hudson et al. device, the motor moves the valve from a first to a second position, while the brake maintains the spring in a wound configuration, without the spring putting any biasing force on the valve as it is moved. Hudson et al. specifically teach that the apparatus "initially winds an internal return spring 54 and then decouples spring 54 from input shaft 24 to drive member 22." See column 7, lines 1-3. Hudson et al. state "in normal operation, drive motor 12 is free to actuate valve 32 (or damper) without having to wind and unwind spring 54" (emphasis added). See column 7, lines 29-31. Hudson et al. thus clearly disclose that in their device, power is not provided "to the drive motor to move the movable member against the biasing force along the range of motion from the first position toward the second position" as is recited in claim 23. In fact, it appears that Hudson et al. would actually teach away from this step.

The Examiner does not assert that Erdman et al. teach this step, and Applicants have reviewed the Erdman et al. disclosure and have found no such teaching or suggestion. As neither Hudson et al. nor Erdman et al. teach or suggest the first method step recited in independent claims 23, 29, and 68, Applicants respectfully request withdrawal of the rejection as applied to

these claims and the claims dependent thereon.

The second method step in independent claim 23 is that of determining when the drive motor stalls along the range of motion at a stalled position by monitoring one or more electrical characteristic of the drive motor. There does not appear to be any teaching or contemplation in Hudson et al. for determining that the drive motor has stalled by monitoring one or more electrical characteristic of the motor. The Examiner acknowledges that Hudson et al. do not teach determining when the drive motor stalls by monitoring one or more electrical characteristics of the drive motor. However, the Examiner cites Erdman et al. as teaching integral electronically commuted fan motor control, wherein the power supply is provided to further reduce power consumption. The Examiner then asserts that it would have been obvious to modify the Hudson et al. device to provide monitoring of actuator position in order to reduce power consumption.

Applicants submit that there is no motivation, outside Applicant's specification, for one of ordinary skill in the art to combine the teachings of Hudson et al. and Erdman et al. The Hudson et al. disclosure is directed to a system for controlling a movable member such as a valve or damper that moves back and forth from a first position to a second position. Erdman et al., however, is directed to a system for controlling a fan that turns continuously. The structure and method of operation of the two systems are completely different.

Furthermore, both Hudson et al. (column 13, lines 30-43) and Erdman et al. (column 4, lines 45-49) appear to teach providing separate sensors to detect motor stall. Thus there would be no motivation to combine the teachings of Erdman et al. and Hudson et al. to include a mechanism for determining when the drive motor of Hudson et al. stalls by monitoring one or more electrical characteristics of the drive motor, as the Examiner suggests. Hudson et al. already provide a mechanism for detecting motor stall, which includes providing stall detect sensors (e.g. Hall sensors). Thus, the proposed modification to Hudson et al. would merely result in a redundant stall detection system.

In addition, Applicants submit that one of ordinary skill in the art would not be motivated to look to a fan motor system such as that taught in Erdman et al. to modify a valve or damper

motor system as in Hudson et al. It appears that the only motivation for such a combination is in Applicants' own specification.

With respect to the third step in independent claim 23, Hudson et al. do not appear to teach or contemplate reducing the power supplied to the drive motor to a level adapted to maintain the movable member at or substantially at the stalled position <u>against the bias force</u> if the motor stalls. Independent claims 35, 51, and 70 recite similar steps. As stated above, Hudson et al. specifically teach that the apparatus "initially winds an internal return spring 54 and then decouples spring 54 from input shaft 24 to drive member 22." See column 7, lines 1-3. Hudson et al. further state "in normal operation, drive motor 12 is free to actuate valve 32 (or damper) <u>without having to wind and unwind spring</u> 54" (emphasis added). See column 7, lines 29-31. Thus, there does not appear to be any teaching or suggestion in Hudson et al. of <u>maintaining</u> the valve at any particular position <u>against a bias force</u>. In fact, Hudson et al. teach that <u>no power</u> needs to be applied to the motor to maintain a valve position - presumably because no bias force is applied during normal operation. More specifically, Hudson et al. state that the drive motor has sufficient <u>detent torque</u> to hold the valve in position. See column 7, lines 33-34. Hudson et al. thus fail to teach or contemplate the elements of claim 23.

In addition, and as stated above, Erdman et al. is directed to a system of powering a fan using a motor. The fan moves in one direction continuously, thus there does not appear to be a bias force against which the fan is moved by the motor. Erdman et al. does not appear to teach or contemplate a structure or method step of reducing power to the motor to maintain a movable member at a stalled position. Thus, neither Hudson et al. nor Erdman et al. teaches or suggests the claimed element.

The Examiner has not addressed the elements of independent claims 42, 58, 61, 72, or 74. Independent claims 42 and 72 recite the method step of:

> providing power to the drive motor to move the damper to the open position via the gear assembly, wherein the power provided to the drive motor is below a level where the drive motor would produce a torque that causes damage to the drive motor, the gear assembly and the damper when the motor normally stalls at the open position

Neither Hudson et al. nor Erdman et al. appear to teach or suggest such a method step. Independent claim 58 recites the method step of "determining when the drive motor stalls by determining when the drive power that is provided to the drive motor exceeds a threshold value." Independent claims 61 and 74 recite similar method steps. Neither Hudson et al. nor Erdman et al. appear to teach or suggest such a method step.

Applicants submit that Hudson et al. and Erdman et al., either alone or in combination, fail to teach or suggest all of the limitations in claims 23-63 and 68-75. For the foregoing reasons, as well as other reasons, withdrawal of the rejection is respectfully requested.

Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims 23-75 are now in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-677-9050.

Respectfully Submitted:

Lange et al.

By their attorney,

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